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INVENTION NUMBER

11057P1 WO

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
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20.08.2004

Applicant's or agent's file reference
11057P1 WO/JM

IMPORTANT NOTIFICATION

International application No.
PCT/GB 03/02796

International filing date (day/month/year)
30.06.2003

Priority date (day/month/year)
28.06.2002

Applicant
RECKITT BENCKISER (UK) LIMITED et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

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preliminary examining authority:



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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 11057P1 WO/JM	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/02796	International filing date (day/month/year) 30.06.2003	Priority date (day/month/year) 28.06.2002
International Patent Classification (IPC) or both national classification and IPC C08L91/08		
Applicant RECKITT BENCKISER (UK) LIMITED et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 27.01.2004	Date of completion of this report 20.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Lanz, S Telephone No. +49 89 2399-7869 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/02796**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1, 3-7 as originally filed
2, 8-11 filed with telefax on 02.08.2004

Claims, Numbers

1-12 filed with telefax on 02.08.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/02796**

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Cited document

D1: US-A-4 002 706 (PRETORIUS DIRK JACOBUS) 11 January 1977 (1977-01-11)

2. Novelty

The present application concerns a paraffin wax candle composition having a penetration value of 30-50 comprising a hard paraffin wax having a penetration value of 16-20 (ASTM D 1321) and a soft wax having a penetration value of no less than 45 (claim 1). The application further concerns the corresponding candle (claim 11).

Document D1 discloses a paraffin composition for candles comprising a hard paraffin wax having a penetration value of at the most 5 and a soft paraffin wax having a penetration value of greater than 90 (see claim 24).

Therefore the subject-matter of claims 1-12 is novel over document D1.

3. Inventive Step

Document D1 is considered to be closest prior art.

The subject-matter of the present application differs from the subject-matter of document D1 by the fact that the hard paraffin wax has a penetration value of 16-20.

The problem of the present application was to provide good quality candles.

This problem was solved by a paraffin composition comprising a hard paraffin wax having a penetration value of 16-20 (see example, claim 1).

This solution is not suggested in document D1.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 03/02796

Therefore the subject-matter of claims 1-12 of the present application involves an inventive step over document D1.

The post burning aesthetics of a candle should also be good; that is, the residual wax should not have a burnt appearance.

Other important criteria include the melting point of the wax. This is ideally around 50°C, for example, from about 45°C to about 55°C. If the melting point is lower than this then a problem of stability can arise in warmer countries but if the melting point of the wax is higher than this, in the case where the candle contains a fragrance or other air-borne agent it is not so easily released because the higher melting waxes hold on to the fragrance too effectively. An additional consideration is that higher melting point waxes tend not to burn so well and tend to leave more residue on the glass container. Also generally, Low Melting Point waxes shrink less than higher Melting Point waxes.

The present invention relates to the concept of producing a paraffin wax composition which produces an optimum combination of all or most of the criteria mentioned above. In particular, it has been discovered that a wax composition which comprises a mixture of a relatively hard paraffin wax with a relatively soft paraffin wax enables the composition to more closely fulfil or approach an optimum combination of the criteria which are explained above.

Specifically, the present invention provides a paraffin wax candle composition comprising a mixture of a hard paraffin wax and a soft paraffin wax the hard wax having a penetration value as measured by the Needle Penetration Test as defined in ASTM D 1321 of 16-20 and the soft wax having a penetration value of no less than 45, the composition itself having a penetration value between 30 and

TABLE

Composition	Paraffin 5203 Solid saturated Hydrocarbons C_nH_{2n+2}	Paraffin 6214 Solid saturated Hydrocarbons C_nH_{2n+2}	Paraffin 6213 Solid saturated Hydrocarbons + Triglyceride < 25%
CAS No.	64742-51-4, 8002-74-2	64742-51-4	Paraffin: 64742-51-4, 8002-74-2 Triglyceride: 84540-04-5
EINECS No.	266-154-5, 232-315-6	265-154-5	Paraffin: 265-154-5, 232-315-6 Triglyceride: 283-093-2
Physical Description	At 20°C, waxy solid	At 20°C, waxy solid	At 20°C, waxy solid
Colour	White	Whitish	White / Whitish
Odour	Practically odourless	Practically odourless	From neutral to slightly fatty like
Congealing point	52-54°C	48-52°C	42-46°C
Penetration test at 25°C (dmm)	16-20	50-70	70-100
Flash point	>150°C	>150°C	>150°C
Viscosity (100°C)	2.5-10 mm ² /s	4.0-6.0 mm ² /s	4.0-5.0 mm ² /s
CAS No. 64742-51-4/Synonyms...Paraffin waxes, petroleum, hydrotreated			
CAS No. 8002-74-2/Synonyms...Paraffin Wax; Paraffin waxes: Paraffin wax (petroleum); Poly(methylene) wax; Wax extract; Paraffin wax fume; Fischer- tropsch wax; Cream E45; Derma-Oil; Duratears; Granugen; Parachoc; Replens; Paraffin Wax, granular;			

It should be noted that all three paraffins appear to be fairly similar but differ significantly in some of their physical properties, in particular the penetration values and also their congealing points, the latter it will be seen being appropriate to provide a melting point of the overall composition around 50°C as explained hereinbefore.

As a specific example of a candle composition in accord with the present invention the proportion of ingredients are set out below.

10

Candle Composition

% by weight
per mix

15

Core Composition

Paraffin 5203	99.898
Pigment Ivory 15-1641	0.1
20 Pigment Cobrizo 29-627	0.002

Wax Composition

Paraffin 6214	65.64
25 Paraffin 5203	28.20
Fir Vanilla Light 175297E	5.41
Microcrystalline Wax 1800	0.65
Pigment Ivory 15-1641	0.09
Pigment Cobrizo 29-627	0.01

30

The proportion by weight of the Core composition to the wax composition is approximately 26:74.

The invention will be illustrated by the following Example:

Method of Manufacture of the Candle

5 1) Core Production and wicking

The appropriate amount of paraffin 5203 is weighed into a mixing tank. The appropriate amounts of the pigment ivory and pigment cobrizo dyes are then added to the same tank.

10 The tank temperature is maintained at 60 to 65°C whilst the contents of the tank are stirred until the dye has melted and completely dispersed.

The resulting coloured liquid wax is then fed to a spraying
15 drum feed tank. The powder is sprayed and pumped via pipes to a powder press.

The appropriate wick is loaded into a wicking machine adjacent to the powder press. The specified length of wick
20 is automatically inserted on line through the core and a metal sustainer is secured to the end.

2) Wax Blend

25 The appropriate amounts of Paraffin 5203, Paraffin 6214 and microcrystalline wax are transferred to a mixing vessel. The vessel temperature is maintained at approximately 65°C whilst the mixture is stirred until all components have been fully melted and dispersed.

30

The appropriate amounts of Pigment Ivory, Pigment Cobrizo and Fir Vanilla Light are then added to the mixing vessel. The vessel temperature is maintained at a temperature of from 60 to 65°C until the dye has completely melted and has
5 been dispersed in the mixture.

3) Filling Line

The wick assembly/coloured core is transferred into
10 a glass jar. The glass jar is heated to 55 to 60°C by passing the glass jar through a glass heater.

The glasses are then filled with the wax blend via calibrated filling heads.

15

The filled glasses are then passed through a cooling tunnel and then an infra red "Flash" heater, which removes air bubbles and smoothes the wax surface.

20 The glasses are then passed through a second cooling unit.

CLAIMS

1. A paraffin wax candle composition comprising a mixture of a hard paraffin wax and a soft paraffin wax the hard wax having a penetration value as measured by the Needle Penetration Test as defined in ASTM D 1321 of 16-20 and the soft wax having a penetration value of no less than 45, the composition itself having a penetration value between 30 and 50.
2. A composition as claimed in claim 1 wherein the soft wax has a penetration value of 50-70.
3. A composition as claimed in any one of the preceding claims wherein the proportion by weight of the soft wax to the hard wax is in the range 50:50 to 90:10.
4. A composition as claimed in claim 3 wherein the proportion by weight of the soft wax to the hard wax is about 70:30.
5. A composition as claimed in any one of the preceding claims wherein the melting point of the composition is in the range from 45°C to 55°C.
6. A composition as claimed in claim 5 wherein the melting point of the composition is about 50°C.
7. A composition as claimed in any one of the preceding claims which contains a microcrystalline wax in an amount up to 1% by weight.

8. A composition as claimed in any one of the preceding claims which contains a polyethylene in an amount up to 1% by weight.

5 9. A composition as claimed in any one of the preceding claims which contains a colouring material in an amount up to 0.5% by weight.

10 10. A composition as claimed in any one of the preceding claims which contains a fragrance and/or other air-borne agent or agents in an amount up to 10% by weight.

11. A candle comprising a composition as claimed in any one of the preceding claims.

15

12. A candle as claimed in claim 11 comprising a container in which the candle composition in a liquid state has been poured and set surrounding a candle wick.

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